REMARKS

Claims 1-30 are currently pending in the application. Applicants request reconsideration of the rejected claims in view of the following remarks.

35 U.S.C. §103 Rejection

Claims 1-30 were rejected under 35 U.S.C. §103(a) for being unpatentable over U. S. Patent No. 6,201,813 issued to Klausmeier, *et al.* ("Klausmeier") in view of U. S. Patent No. 5,696,761 issued to Kos, *et al.* ("Kos"). This rejection is respectfully traversed.

Applicants note that a §103 rejection requires the Examiner to first establish a prima facie case of obviousness: "The examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness." M.P.E.P. § 2142. The Court of Appeals for the Federal Circuit has set forth three elements which must be shown for prima facie obviousness:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

However, Applicants submit that the combination of references suggested by the Examiner does not show all of the features of the claimed invention. For example, neither Klausmeier or Kos show assembling segmented data frames belonging to the same flow of data into an assembled

data frame for transmission over a backbone from an ingress node to an egress node.. In fact, it would appear that the Klausmeier reference would teach away from the claimed invention.

The invention is directed to a method and system for assembling segmented frames of data transmitted over a backbone network, where the backbone network is a high-speed network. In an embodiment of the invention, a method is provided for assembling data frames into long Maximum Transmission Units (MTU) for transmission between an ingress node connected to the sending unit and an egress node connected to the receiving node. In implementation, the ingress and egress nodes are associated with first and second access links, respectively, which are low-speed access links requiring data frames to be segmented into short MTUs between the sending unit and the ingress node and between the egress node and the receiving unit. The embodiment includes assembling, in the ingress node, a plurality of consecutive segmented data frames belonging to a same flow of data (transmitted from the sending unit to the ingress node)into an assembled data frame corresponding to one of the long MTU. Also included is transmitting the assembled data frame over the backbone from the ingress node to the egress node at a high speed authorized by the backbone links. The assembled data frame is de-assembled at the egress node into consecutive segmented data frames corresponding to short MTUs, and then transmitted from the egress node to the receiving unit. This is in contrast to Klausmeier which disassembles long data frames into shorter ATM cells for transmission, and Kos which multiplexes short data frames from multiple data flows without assembly into a long data frame for switching purposes.

In other embodiments, the invention includes assembling a long data frame from short data frames of the same data flow by separating each short data frame into its header portion and data portion. The header portions and data portions are then reassembled into a long data frame, where the long data frame includes a main protocol header, and assembly headers and corresponding data portions. The main protocol header may include one or several levels of protocol depending on the data flow characteristics such as IP/TCP, IP, or SNA. Each assembly header includes information relating to its corresponding data field such as field length, control field, and optionally a checksum field. As mentioned above, the main protocol header, assembly

headers and data fields are sent as a single data frame. The information in the main protocol header and assembly headers is used by the egress node to disassemble the long data frame into the corresponding short data frames for transmission over a low-speed link. Assembling short data frames into a long data frame at the ingress node allows the assembled data to be transmitted over the backbone in a larger data frame thereby taking advantage of the high-speed data transmission characteristics of the backbone.

Klausmeier simply does not show the features of the claimed invention. For example, Klausmeier is directed to disassembling a frame of data into a plurality of cells and injecting each of the cells into a logical queue. In implementation, Klausmeier utilizes ATM cell switching for transmitting digital information where the information is broken into equal sized units called cells. This is the opposite of that recited by the claimed invention. That is, before transmission, Klausmeier disassembles the information into cells of fixed length, where each cell receives an ATM header. Accordingly, Klausmeier disassembles longer data frames into shorter data frames before transmission from an ingress node to an egress node in order to take advantage of ATM switching. As such, Klausmeier does not show assembling short data frames, at an ingress node, into a longer data frame for transmission over a backbone.

But,the Examiner asserts that Klausmeier shows assembling in an ingress node a plurality of consecutive segmented data frames belonging to the same flow of data from a sending unit at column 5, lines 44-45. However, Klausmeier actually shows segmenting or disassembling a frame of data into ATM cells according to an AAL-5 protocol and adds header information before injecting the completed cells into a cell input engine. The cells then appear as regular ATM traffic in a queuing circuit to be transmitted through the circuit. This is in contrast to the claimed invention which shows assembly of a long data frame from short data frames prior to transmission from the ingress node along the backbone to the egress node.

The Examiner also asserts that Klausmeier shows de-assembling the assembled data frame in an egress node into consecutive segmented data frames at column 5, lines 56-59. However, Klausmeier actually shows reconstructing a data frame using a reassembly engine

where the reconstructed frame is built of cells extracted from a queuing circuit receiving regular ATM traffic. Such cells are the cells in ATM format which were formed by the segmentation process prior to transmission. The reassembly engine receives the cells from the queuing circuit and strips off the cell header information whereby the cell payload for each cell of the received frame is read into memory for assembly into the corresponding data frame. Accordingly, frame extraction is accomplished by collecting and reassembling ATM format data cells. This is in contrast to claimed invention whereby an egress node receives a long data frame and disassembles it into the corresponding short data frames.

Kos does not compensate for the deficiencies of Klausmeier. Kos shows a method and apparatus for interfacing low-speed access links to a high-speed time multiplexed switch fabric where the high-speed time multiplexed switch fabric is for use in a telecommunications system having relatively low-speed access links. As shown in the figures, Kos has multiple programmable multiplexers and demultiplexers operating as interfaces between low-speed links carrying data and the high speed switch fabric switching the data between the low-speed links. In operation, each a low-speed link carries a data flow having data packets, and a programmable multiplexer receives data packets from multiple such low-speed links. The programmable multiplexer mixes the data packets into one signal, and transmits that signal of mixed data packets to a high speed switch fabric. The high speed switch fabric receives the multiplexed data packets, and using control signals received from a processor, directs particular data packets from each multiplexed signal to predetermined programmable demultiplexers. This is in contrast to assembling short data frames of the same flow of data into long data frames for transmission in long MTUs having a protocol header and assembly headers for each data field as in claimed embodiments.

In Kos, each demultiplexer receives a multiplexed signal having multiple data packets and demultiplexes the signal and distributes data packets between multiple low-speed links. Because each multiplexer receives data packets from multiple low-speed links, the multiplexer

mixes multiple data flows into a single multiplexed signal. In contrast, claimed embodiments assemble short data frames from the same flow of data into a long MTU.

Additionally, because the high-speed switch fabric uses an external control signal received from a processor to control switching of the data packets, the multiplexed signals of Kos do not include headers of any type. In contrast, the long MTUs transmitted over the backbone include protocol headers, and an assembly header for each data field.

Now to the Examiner's specific arguments. The Examiner asserts that Kos discloses a method of transmitting data frames from a sending unit to a receiving unit including requiring the data frames to be segmented into short MTUs at column 4, lines 56 to 60. However, this passage shows that Kos actually multiplexes the data frames which is simply adding multiple signals to produce a single signal, and does not include any type of data frame assembly with a main protocol header or frame disassembly as in the claimed embodiments.

The Examiner also asserts that Kos discloses assembling a plurality of data frames into an assembled data frame corresponding to one of a long MTU at column 5, lines 14-20. However, actually Kos multiplexes data packets which are carried in time slots. A time slot is defined as a predetermined period of time for which the high-speed switch fabric will maintain a link between an input and output line. As such, each time slot may carry a data packet, however, adjacent time slots and the data packets carried therein are not assembled into a longer data frame having a protocol frame and assembly headers corresponding to data fields as in a long MTU of claimed embodiments.

Accordingly, for the reasons discussed above, neither Klausmeier nor Kos, either alone or in combination, disclose or suggest, at least, (i) assembling a plurality of consecutive segmented data frames belonging to a same data flow into an assembled data frame corresponding to one of a long MTU, (ii) de-assembling or (iii) assembling instrumentalities to assemble a plurality of consecutive segmented data frames belonging to the same flow of data into an assembled data frame corresponding to one of a long MTU.

As such, the Examiner has failed to establish a prima facie case of obviousness over claims 1 and 18. Claims 1 and 18 are thus distinguishable over the references of record and are in allowable condition. Claims 2-17 and 19-30 are allowable at least for the reasons discussed above with respect independent claims 1 and 18, from which they respectively depend, as well as for their added features.

Applicants respectfully request that the rejection of claims 1-30 be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant submits that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 09-0457.

Respectfully submitted,

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